

Amendment to the Claims

1 (Currently Amended). A method for communication between two or more customer virtual local area network (LAN) segments through a provider network, with each customer virtual LAN segment including a customer edge bridge, and where the provider network has one or more provider edge bridges coupled to the customer edge bridges, comprising the steps of:

in the provider edge bridges coupled to a customer virtual LAN segment:

receiving topology change notifications (TCNs) from the customer network in response to a topology change in one or more of the customer virtual LAN segments;

in response to receiving a TCN from the customer network, monitoring end host media access control (MAC) addresses in data units received from the customer network for a predetermined time period;

determining whether a topology change has occurred in one or more of the customer virtual LAN segments that affects paths of data units through the provider network by:

monitoring whether a predetermined number of new end host MAC addresses of data units received from the customer network in the predetermined time period are found in a MAC address memory file, wherein the MAC address memory file associates end host MAC addresses with ports of the provider edge bridge; and

monitoring whether a contradiction occurs between an end host MAC address of a data unit received from the customer network and the MAC address memory file;

~~flushing an the MAC address memory file associating end host addresses with ports of the provider edge bridge in response to detecting detecting an end host address indicating that a topology change has occurred in one or more of the customer virtual LAN segments affecting paths of data units through the provider network; wherein detecting an end host address indicating that a topology change has occurred comprises:~~

~~detecting a predetermined number of end host addresses of data units received in the predetermined time period is not found in the address memory file;~~  
and

in response to determining a topology change in one or more of the customer virtual LAN segments do not affect paths of data units through the provider network, storing a new address in the MAC address memory file without flushing the MAC address memory file.

2 – 4. (Canceled).

5 (Previously Presented). The method of claim 1 and further comprising the step of storing a list of end host addresses that are received during the predetermined time period and are not found in the address memory file.

6 (Original). The method of claim 1 wherein said end host address are media access control (MAC) addresses.

7 (Original). The method of claim 1 wherein the data units are frames.

8 (Currently Amended). A method for communication between two or more customer local area network (LAN) segments through a provider network, wherein at least one each customer LAN segment includes at least a first customer edge bridge and a second customer edge bridge, and where the provider network has at least a first one or more provider edge bridge bridges coupled to the first customer edge bridge bridges and at least a second provider edge bridge coupled to the second customer edge bridge, comprising the steps of:

in each of the first and second customer edge bridge of the at least one customer a LAN segment having a multi-homed connection to the provider network:

determining whether a topology change in the customer LAN segment affects paths of data units through the provider network in response to a status change in a blocked link between one of the first and second customer edge bridges and another edge bridge in the at least one customer LAN segment;

when a topology change does not affect paths of data units through the provider network, transmitting unflagged topology change notifications (TCNs);

when a topology change affects paths of data units through the provider network, transmitting flagged topology change notifications (TCNs) which relate to the topology changes affecting paths of data units through the provider network, wherein the flagged TCNs include a set snooping flag bit that indicates the blocked link is affected by the TCN;

when a topology change does not affect paths of data units through the provider network, transmitting unflagged topology change notifications (TCNs), wherein the unflagged TCNs include a snooping flag bit that is not set;

and

in each of the provider edge bridges coupled to a customer LAN segment:

receiving topology change notifications (TCNs) from the customer network;

in response to receiving a flagged TCN, flushing an address memory file associating end host addresses with ports of the provider edge bridge; and

in response to receiving an unflagged TCN, passing the TCN without flushing an address memory file.

9 -10. (Canceled).

11 (Currently Amended). A provider edge bridge of a provider network for providing communication with one or more customer edge bridges of customer local area network (LAN) segments, comprising:

processing circuitry for:

receiving topology change notifications (TCNs) from the one or more customer bridges in response to a topology change in one or more of the customer LAN segments;

in response to receiving a TCN from the customer network, monitoring end host media access control (MAC) addresses in data units received from the one or more customer bridges for a predetermined time period to determine whether a topology change has occurred in one or more of the customer LAN segments that affects paths of data units through the provider network;

determining that a topology change has not occurred in one or more of the customer virtual LAN segments that affects paths of data units through the provider network by:

determining less than a predetermined number of end host MAC addresses of data units received from the customer network in the predetermined time period are not found in a MAC address memory file, wherein the MAC address memory file associates end host MAC addresses with ports of the provider edge bridge; and

determining no contradictions occur in the predetermined time period between an end host MAC address of a data unit received from the customer network and the MAC address memory file;

flushing an address memory file associating end host addresses with ports of the provider edge bridge when it is determined that if a data unit received in the predetermined time period has a end host address indicating that a topology change has occurred in one or more of the customer LAN segments affecting paths of data units through the provider network; wherein an end host address indicates that a topology change has occurred by:

~~the end host address of a data unit received in the predetermined time period is in conflict with information in the address memory file; and~~

~~the end host address is found in an address memory file of another bridge in the provider network; and~~

in response to determining that a topology change in the customer LAN segments do not affect paths of data units through the provider network ~~an incoming end host address not contradicting information in the address memory file in the predetermined time period and the end host address is not found in an address memory file of another bridge in the provider network~~, storing a new address in the MAC address memory file without flushing the MAC address memory file.

12 – 14. (Canceled).

15 (Previously Presented). The provider edge bridge of claim 11 and further including a memory for storing a list of end host addresses that are received during the predetermined time period and are not found in the address memory file.

16 (Original). The provider edge bridge of claim 11 wherein said end host address are media access control (MAC) addresses.

17 (Original). The provider edge bridge of claim 11 wherein the data units are frames.

18 (Previously Presented). A communication network including two or more customer local area network (LAN) segments coupled through a provider network, where each customer LAN segment includes a customer edge bridge, and where the provider network has one or more provider edge bridges coupled to the customer edge bridges, comprising:

in each edge bridge of a LAN segment having a multi-homed connection to the provider network, a customer edge bridge comprising a processor for flagging topology change notifications (TCNs) which relate to topology changes affecting paths of data units through the provider network, wherein TCNs are flagged in response to a blocked path coupled to the edge bridge and in response to TCNs generated locally by the customer edge bridge and wherein TCNs are not flagged in response to other topology changes not affecting paths of data units through the provider network; and

in each of the provider edge bridges coupled to a customer LAN segment a processor for:  
receiving topology change notifications (TCNs) from the customer network;  
in response to receiving a flagged TCN, flushing an address memory file associating end host addresses with ports of the provider edge bridge; and  
in response to receiving an unflagged TCN, passing the TCN without generating an address memory file.

19 – 20. (Canceled).

21. (Currently Amended) The method of claim 1, wherein determining that a topology change has occurred in one or more of the customer virtual LAN segments that affects ~~detecting an end host address indicating that a topology change has occurred in one or more of the customer LAN segments affecting~~ paths of data units through the provider network, further comprises:

when less than ~~detecting~~ a predetermined number of new end host MAC addresses of data units received in the predetermined time period are not ~~is not found~~ in the address memory file, storing the new end host MAC addresses in a new address file;

transmitting the new address file to other provider edge bridges in the provider network;  
and

determining that end host addresses of data units received in the predetermined time period are found in an address memory file of another provider edge bridge in the provider network.

22. (Canceled). Please cancel claim 22.